GREAT LAKES DECK SHEET CODING MANUAL

Ontario
Ministry of the Environment

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GREAT LAKES

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INTRODUCTION

The format of the deck sheet facilities transfer of information to punch cards. These cards comprise the input to the Great Lakes computer system data file.

It is absolutely necessary to ensure that all input data is accurate.

A completed deck sheet and appropriate codes have been included for ready reference in the following sections (Appendix B).

POINTS TO KNOW

1. The numerals in small print under the squares on the deck sheet indicate the card column (cc) on the IBM card in which the written information will be keypunched.

2. The blocks of squares, e.g. Barm Pres., Water Depth, etc., have a specified extent, i.e. barometric pressure has three squares identified as cc 58, 59, 60. More than one digit in any one block cannot be accepted by the computer system, and, in this example, barometric pressure must be identified as three digits.

3. Insert figures as clearly as possible so that they are legible to the key punchers.

4. Ensure that the required data are inserted in their appropriate block, e.g. sampling time must always have the squares filled in (0930).

5. When zeros are required, fill them in. Do not leave any square empty when an actual value of zero is indicated.

   When a block of squares is left blank, this will mean that the test or observation was not performed.

6. Fill out one original copy of the deck sheet. To facilitate the photocopying of these deck sheets when they are forwarded to the laboratory, all entries should be made in blue ink.

A deck sheet is divided into three sections. Each section generates one computer card. Card 1 specifies the station, the body of water, the time of sampling, water depth, etc. Card 2 specifies the chemical tests to be done for each sample and Card 3 specifies the depth of which the sample was taken, its type, etc. For each section an IBM card or cards will be keypunched in order to record in a 'computer

ready mode' the written information on the deck sheet. These cards will then be identified by Type as either Card 1, Card 2, or Card 3.

The three sections (or card types) on the deck sheets for which information is to be recorded:

Card 1: Information identifying a sampling station.
Card 2: Requests for on-shore laboratory analysis.
Card 3: Results of on-board analysis.

CARD 1: INFORMATION IDENTIFYING A SAMPLING STATION

cc 2-11 Sample Numbers -Insert the sample number assigned to the first sample taken, into cc 2-6.
-Insert the sample number assigned to the last sample taken, into cc 7-11.
-Note: A sample number MUST be entered in each block. The sample number in cc 7-11 may be the same as that in cc 2-6 when only one sample was collected for that visit.

cc 12-13 Project
-Refer to cruise schedule and insert applicable 2 digit code.

cc 14 Agency
-Preprinted

cc 15-16 Study

-Preprinted

cc 18-19 Body of Water (BOW)

-Refer to Appendix A or cruise schedule and insert applicable 2 digit code.

cc 20-21 Station Type

-Refer to Appendix A or cruise schedule and insert applicable 2 digit code.

cc 25-29 Distance from Reference Point

-To be left blank if the station type is 01 or 17.

Note: In all other cases, the distance from reference point must be recorded on the deck sheet.

-The reference point (zero point) for stream stations (type 02) is the point at which the cross-section range line crosses the right-hand shore looking downstream.

-With respect to the reference point for outfalls or intakes the following apply: the zero point is the point of discharge or withdrawal of the water. If the sample is collected prior to initial dilution (inside the pipe) the distance from reference point is recorded as "zero" feet. In addition, samples collected from locations other than at 0 feet from reference point, "bearing from reference point" (cc 77, 78 and 79) should be recorded (magnetic compass bearing:three digits).

-Distance from reference point may be used for lake station if you require to tie a non-existing sampling location with an existing station.

cc 30-33 Water Depth - Meters

-Insert the water depth at the station measured in meters (to 0.1 m) from the surface to the bottom.

cc 34-39 Date of Samples

-Record the day of the month, the month of the year (two digits each).

cc 40-43 Sampling Times ("Local Times")

-Record the time in hours and minutes (24-hour clock) that the actual sample collection occurred using the local time system.

cc 48-49 Weather

-Refer to Appendix A and insert applicable codes.

Note: Both columns should be marked except in the case of a "clear condition" when cc 48 would be 1 and then cc 49 would be left blank.

cc 50-51 Wind Force-Knots

-Insert the value in knots per hour for measured wind force (2 digits).

cc 52-54 Wind Direction - Degrees North

-Wind direction is measured in degrees in a clockwise direction from true north.

-A north wind is defined as blowing from the north and its direction is recorded as 360^{o}.

Note: Insert 500 in cc 52-54 if the wind is variable.

-Never record wind force as 00. Leave it blank. In all cases cc 50-54 must be completely filled in or all columns left blank.

cc 55-57 Air Temperature ^{o}C

-Insert the value in degrees centigrade measured to the nearest tenth.

-For temperatures below zero, add 50 to the measured value, e.g. - $5^{o}C$ is recorded as $55.0^{o}C$.

cc 58-60 Barometric Pressure

-Insert the value in millibars for the measured barometric pressure.

Note: If barometric exceeds 1000 millibars record only last three digits.

cc 62-65 Station Number

-Insert the station number which corresponds to the sampling location from the chart and the cruise plan.

Note: If station number is not available, plot the location on the relevant hydrographic chart and submit the chart with

the deck sheets to the office. A station number will be assigned to the location and submitted to EDP. Do not use any new station numbers before checking with the office staff.

cc 70-72 Secchi Disc:Depth

-Insert the value in meters measured to the nearest tenth.

cc 73-74 Secchi Disc:Colour

-Refer to Appendix A for corresponding colour code which best describes the colour of the water reflected on the disc.

Note: If a single numeral applies to the colour then the code should be repeated in cc 74. e.g. Green will be indicated by 55 in cc 73 and 74.

cc 77-79 Bearing from Reference Point

-This block is used together with distance from reference point (cc 25-29) when a sample is collected from a location relative to an outfall or intake.

-The bearing is measured from the outfall or intake to the sampling location in degrees from North where North is 360^{o}.

-The reading is measured to the nearest 5 degrees.

-Bearing from Reference point should be used when a sample is collected in the area of an outfall or intake other than zero feet from reference point.

CARD 2: REQUEST FOR ON-SHORE ANALYSIS

cc 2-6 Sample Number

-Insert one sample number from the range of numbers on Card 1 cc 2-11, into one of the available blocks in Card 2, when onshore analysis is requested for that particular sample. Continuing sample numbers run consecutively below each other.

Note: If more than six sample numbers are used for any one sampling location, a second deck sheet is required. The second deck sheet will have an unique set of sample numbers other than those reported on the first deck sheet, while the card information on the 2nd deck sheet must be identical to that reported on Card 1 of the original sheet.

IMPORTANT

Separate sample number should be assigned to the following types of samples:

-when grab sample is collected;

-when phytoplankton and/or chlorophyll sample is collected;

-when zooplankton sample is collected;

-when benthic sample is collected;

-when bottom grab sample is collected;

-when core sample is collected.

cc 7-10 Test Requested for Bacteriological Analyses

-Check the box under the type(s) of analysis required.

cc 11 Chemical A

-Check cc 11 only if all analyses in cc 11-19 are required.

Note: If specific parameters are required, cc 11 should be blank and individual columns from cc 12-19 should be checked.

cc 20 Blank

-Do not use under any circumstances

cc 21-40 Test Requests

-Check the box under the particular analysis required.

cc 41-61 Additional Analysis Requests

-Refer to Appendix D for the appropriate test code and enter it into the first empty digit block beginning at cc 41, 42 and 43. One 3 digit block is used for each parameter.

Note: The name of the parameter should be written inside the block and the 3 digit test code must be entered in the appropriate squares for keypunching. (Refer to Appendix B example.)

IMPORTANT

-A card 3 entry must be submitted for all sample numbers entries used on card 2.

CARD 3 RESULTS OF ONBOARD ANALYSIS

cc 2-6 Sample Number

-Insert one sample number for each sample taken against which the corresponding results of onboard analysis will be recorded.

cc 7-10 Sample Depth-Meter

-Insert the figure in meters for the vertical depth at which the sample was taken to the nearest tenth of a meter.

Note: The sample depth must be less than the water depth.

-For a sediment grab sample, add 0.1 m to the water depth (card 1, cc 30-33) and record in cc 7 to 10 on card 3.

cc 11-13 Field Conductivity

-Micro Mhos/square centimeter; insert measured value.

IMPORTANT

-When field conductivity value is greater than 999, record the conductivity value under REMARKS and the office will submit the bench sheet to EDP.

cc 14-16 Water Temperature ^{o}C

-Insert the temperature value of sample collected in degrees centigrade to the nearest tenth of a degree.

cc 17-20 Dissolved Oxygen - ppm

-Insert the value in parts per million for the concentration of dissolved oxygen in the sample collected.

-Dissolved oxygen is reported to the nearest tenth. Leave cc 20 blank.

cc 21-24 pH-Standard Units (S.U.)

-Insert the value for the pH of the sample (depending on the meter used either read to nearest 10th or if digital meter used recorded value shown).

cc 25-27 Alkalinity - $CaCO_3$ ppm

-Insert value measured for alkalinity of the sample collected to three digits, i.e. a value of 90 would be reported as 090.

cc 28-34 These parameters are seldom used, however, if they are requested, the following procedure should be followed:

cc 28-30 Current-Direction Degrees North

-Insert value for current direction measured in degrees from north in a clockwise direction.

Note: A northerly current defined as flowing towards the north and its direction is recorded as 360^{o}.

cc 31-34 Current-Velocity cm/sec

-Insert the value in centimeters per second for the measured current velocity.

Note: A conversion factor has been provided in Appendix A if the velocity is measured in feet per second.

cc 36 BT. Taken

-Insert check mark when B.T. cast and slide was taken.

Note: For each B.T. slide collected, the following information is required:

-assign sample number	cc 2-6
-enter initial depth as 0.0	cc 7-10
-enter depth composite as code 12	cc 72-73
-enter total depth of station	cc 74-77
-enter number of samples as a continuous sample-code 99	cc 78-79

IMPORTANT

-Record sample number, date of collection, body of water, station number, surface temperature from thermometer, station depth, and the B.T. serial number on the BT slide.

cc 72-73 Sample Type

-Refer to Appendix A for appropriate code.

Note: An entry must be made for all samples collected other than water grab sample which is sample type 11. Therefore, the only sample type which may be omitted is type 11.

cc 74-77 Interval-Composite Sample

-Insert total depth in meters or time in hours for depth or time composite samples respectively.

-In case of depth composite sample, the interval is measured between the initial depth and final depth to the nearest tenth of a meter. Similarly in case of time composite samples, the interval is measured between the initial time and the final time to the nearest tenth.

cc 78-79 Number of Samples

-Insert number of samples collected over the interval depth or interval time for a composite sample.

APPENDIX A

COMPUTER CODES FOR DECKSHEETS

APPENDIX A

PROJECT CODES

Lake Erie	- 30
Lake Ontario	- 31
St. Clair R.	- 32
Detroit R.	- 33
Lake St. Clair Hg.	- 34
Leamington	- 35
Toronto Area	- 36
Pickering G.S.	- 37
Grand River	- 38
St. Marys R.	- 40
Thunder Bay	- 41
Douglas Point G.S.	- 42
Collingwood	- 43
Lake Huron	- 44

BODY OF WATER

Code in Cols 18-19 - Card 1

B.O.W.	Code	B.O.W.	Code
Lake Superior	01	Lower Niag R.	11
Georgian Bay	03	St. Lawrence R.	12
Lake St. Clair	04	St. Marys R.	13
Upper Niag R.	05	North Channel	14
Lake Ontario	06	St. Clair R.	15
Whitefish Bay	07	Lake Erie	16
Lake Huron	08	Bay of Quinte	17
Hamilton Bay	09		
Detroit River	10		

STATION TYPE

cc 20, 21 - Card 1

	Code
Lake	01
Stream	02
Outfall - Mun. Sanitary Treated	03
- Mun. Sanitary Raw	04
- Mun. Storm	05
- Mun. Combined Treated	06
- Mun. Combined Raw	07
- Mun. Relief	08

STATION TYPE (continued)

	Code
Outfall - Ind. Process	09
- Cooling	10
- Ind. Storm	11
- Ind. Sanitary	12
Outfall - Pri. Sanitary Treated	13
- Pri. Sanitary Raw	14
Tributary Stream	15
Landfill Project	16
Harbour Station (Kingston Harbour)	17
Intake - Municipal Water	20
- Industrial Water	21
- Private Water	22

WEATHER CARD 1

Weather	Code cc 48	Weather	Code cc 49
Clear	1	Light	1
Rain	2	Medium	2
Hail	3	Heavy	3
Snow	4		
Cloud	5		

SECCHI DISC COLOUR cc 73-74 - Card 1

Colour	Code	Colour	Code
Black	0	Green	5
Red	1	Blue	6
Brown	2	Violet	7
Orange	3	White	8
Yellow	4	Grey	9

SAMPLE TYPE

cc 72-73 Card 3

Sample Composition	Code cc 72	Sampling Method	Code cc 73
Whole water	1	Grab	1
Bottom deposit	4	Space composite	2
		Time Composite	3

FACTORS

Feet	x	.30	= Meters
Ft/Sec	x	30.50	= Cm/Sec

MISCELLANEOUS

Current Direction on Card 3 - the value is measured to degrees from north in the direction to which the water flows.

Wind Direction on Card 1 - the value reported is measured in degrees from north in the direction from which the wind blows.

APPENDIX B

DECK SHEET

DECK SHEET

VESSELS: MONITOR ☐ I ☐ II ☐ IV
MON-ARK ☐
GUARDIAN ☑

CD: 1 | SAMPLE NUMBERS FROM: 30000 | TO: 30003 | PROJECT: 31 | AGENCY: 1 | STUDY: 01 | BODY OF WATER: 06 | STATION TYPE: 01 | DIST FROM REF POINT FEET: | WATER DEPTH METER: 70.6 | DATE OF SAMPLE D M Y: 12 08 76

SAMPLING TIME: 1325 | WEATHER: 2 2 | WIND FORCE KNOTS: 08 | WIND DIRECT DEG N: 220 | AIR TEMP °C: 17.0 | BARM PRES (mbs): | STATION: 0018 | SECCHI DISC DEPTH METER: 2.3 | SECCHI DISC COLOUR: 55 | BT TAKEN: ☐ | CORE TAKEN: ☐ | BEARING FROM REF POINT DEG N:

EXPECT PROBABLE HIGH BACTERIAL COUNT ☐

CD	SAMPLE NO	COLIFORM MF	FECAL COLI	FECAL STREP	TOT PLT CNT	CHEMICAL A	SOL P	TOTAL P	NO3+NO2	AMMONIA	TOTAL KJELD	CONDUCTIVITY	TURBIDITY	PHENOLS	CHLORIDE	SILICA	TOTAL SOLIDS	TOT VOL SOLIDS	DISS SOLIDS	SUSP SOLIDS	HARDNESS	PHYTO PLANKTON	CHLORO ABC	ZOO PLANKTON	BENTHIC FAUNA	TOTAL IRON	ETHER SOLUBLES	SULPHATE	SULPHITE	CYANIDE	BOD	COD	PESTICIDES	TOTAL LEAD	P.C.B.
2	30000	✓	✓	✓	✓	✓								✓	✓	✓							☐						✓						229	580
2	30001	☐				✓								✓	✓	✓							☐						✓						229	580
2	30002	☐				☐																	✓												
2	30003	☐				☐																	✓												
2		☐				☐																	☐												
2		☐				☐																	☐												

CD	SAMPLE NO	SAMPLE DEPTH METER	FIELD COND µMHOS/CM² 25°C	WATER TEMP °C	D O (ppm)	pH (SU)	ALKALINITY CaCO3(ppm)	CURRENT DIRECT DEG N	CURRENT VELOCITY CM/SEC	BT TAKEN	SAMPLE TYPE	INTERVAL (METERS - HOURS)	NO OF SAMPLES
3	30000	1.5								☐			
3	30001	7.0								☐			
3	30002	1.5								☐			
3	30003	7.0								☐	12	5.5	02
3										☐			
3										☐			

ENTERED BY: Law | CHART DESCRIPTION: | CHECKED BY: | DATE:

REMARKS

0781 3/76

APPENDIX C

PARAMETER CODES

Due to the constant changes occurring in parameter codes, it is presently impractical to append a parameter code listing.

A printout of the latest parameter codes is available upon request from Administrative and Data Services Section of the Water Resources Branch.